February 28, 2019

Mr. Russell Fish
Office of Remediation 3LC20
U.S. Environmental Protection Agency
1650 Arch Street
Philadelphia, PA 19103-2029

Regarding: RCRA Facility Investigation Phase IV Work Plan
Honeywell Delaware Valley Works
Claymont, Delaware

Dear Russell:

Enclosed are two (2) paper copies of the RCRA Facility Investigation Phase IV Work Plan for the Honeywell International Inc. Honeywell Delaware Valley Works in Claymont, Delaware. Please note that Appendix A (HASP) and Appendix C (QAPP) are included as CDs within the paper copies due to their size. Also enclosed is an electronic version of the complete Work Plan on CD.

Please contact Steve Coladonato at 302-791-6738 or John Mihalich at 610-877-6020 if you have questions or require further information.

Sincerely,
Wood Environment & Infrastructure Solutions, Inc.

John P. Mihalich, P.G.
Associate Geologist

cc w/enc: Larry Matson – DNREC (1 copy on CD)

cc w/o enc: Steve Coladonato – Honeywell
Russell Davis – Honeywell
Nelson Johnson – Arnold & Porter

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RCRA FACILITY INVESTIGATION PHASE IV WORK PLAN

HONEYWELL DELAWARE VALLEY WORKS
CLAYMONT, DELAWARE

Prepared for

Honeywell

115 Tabor Road
Morris Plains, NJ 07950

Prepared by

wood.

Wood Environment & Infrastructure Solutions, Inc.
751 Arbor Way, Suite 180
Blue Bell, PA 19422

February 2019

CERTIFICATION

I certify that the information contained in or accompanying the RFI Phase IV Work Plan for the Delaware Valley Works in Claymont, Delaware is true, accurate, and complete.

As to the identified portion of the RFI Phase IV Work Plan for which I cannot personally verify its accuracy, I certify under penalty of law that this Work Plan and all attachments were prepared in accordance with procedures designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, or the immediate supervisor of such person(s), the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fines and imprisonment for knowing violations.

Honeywell International Inc.

Steven Coladonato

Remediation Manager

Honeywell

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1.0 INTRODUCTION

Wood Environment & Infrastructure Solutions, Inc. (Wood), on behalf of Honeywell International Inc. (Honeywell), is submitting this Phase IV Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan (the Work Plan) for the Honeywell Delaware Valley Works (DVW) in Claymont, Delaware (the Site). This Work Plan is being submitted to the United States Environmental Protection Agency (USEPA) in response to the USEPA's request for work plans as stated in its May 22, 2018 comment letter:

- Provide a work plan to locate and delineate the previously unidentified source of volatile organic compounds (VOCs) in the vicinity of well MW-6;
- Provide a work plan to completely delineate the groundwater plume migrating from Areas 5 and 6; and
- Provide a work plan to assess soil vapor intrusion within occupied structures as referenced in the RFI Report.

The USEPA's May 22, 2018 request is based recommendations for further investigation summarized in the April 12, 2016 RFI Report.

1.1 WORK PLAN OBJECTIVES

The overall objectives of the RFI, as agreed to between the USEPA and Honeywell during a meeting on August 28, 2014 and as stated in the June 16, 2015 RFI Work Plan approved by USEPA, are:

1. Collection of remaining data necessary to delineate waste and the release of hazardous constituents at Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs), necessary to evaluate human health and environmental risk, and to support selection of corrective measures at SWMUs as noted in the March 2014 Corrective Action Framework Technical Memorandum;
2. Collection of groundwater data necessary to support a Current Human Exposures Under Control Environmental Indicator (EI) status of "Yes";
3. Collection of groundwater data necessary to support a Migration of Contaminated Groundwater Under Control EI status of "Yes"; and,
4. Completion of a Human Health Risk Assessment (RA) to provide the decisional basis for USEPA selection of corrective measures.

Honeywell's commitment to the RCRA Lean program was reiterated during a phone call between the USEPA and Honeywell on July 10, 2017. During a meeting between the USEPA and Honeywell on September 21, 2017, the USEPA requested the development of Corrective Action Objectives (CAOs) using USEPA's RCRA Facilities Investigation Remedy Selection Track (FIRST) Toolbox for Corrective Action. The USEPA and Honeywell agreed to use the RCRA FIRST Toolbox for all areas of investigation, starting with SWMU 9.

Appropriate interim measures for SWMU 9 were discussed during the September 21, 2017 meeting.

The data collection activities proposed in this Work Plan will be used to support these overall objectives, as applicable, as well as the following objectives in response to the USEPA's May 22, 2018 request:

1. Locate and delineate the previously unidentified source of VOCs in the vicinity of well MW-6;
2. Delineate the groundwater plume migrating from Areas 5 and 6; and
3. Assess soil vapor intrusion within occupied structures at the Site.

This Work Plan references the following documents.

1. The RFI Work Plan, Rev. 4, which includes the following four parts and was approved by USEPA on July 7, 2015:
    a. Part I, the RFI Work Plan;
    b. Part II, the Sampling, Analysis, and Monitoring Plan (SAMP);
    c. Part III, the Data Management Plan (DMP); and
    d. Part IV, the Community Relations Plan (CRP)
2. The Quality Assurance Project Plan (QAPP), which was submitted to USEPA in April 2014. The content of the QAPP is now consistent with the Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP), and was prepared as a separate stand-alone document. Updates to the QAPP were submitted to the USEPA via email on January 20, 2015.
3. The Health & Safety Plan (HASP), which was last updated in 2015 prior to the RFI.

These documents, and updates to these documents as necessary for purposes of this Work Plan, are discussed in **Section 4.0**.

1.2 WORKPLAN ORGANIZATION

The report is organized as follows:

- **Section 1.0** provides an introduction to this Work Plan;
- **Section 2.0** provides background information;
- **Section 3.0** provides a description of the scope of work;
- **Section 4.0** provides a summary of the referenced documents;
- **Section 5.0** provides a description of reporting as a result of the proposed scope of work;
- **Section 6.0** provides the project management plan; and
- **Section 7.0** lists the referenced documents.

2.0 BACKGROUND

2.1 SITE DESCRIPTION

The DVW is comprised of several parcels totaling 34 acres straddling the Delaware – Pennsylvania state line in an area where heavy industries of chemical manufacturing, refining, and steelmaking have been ongoing for decades (**Figure 1**). Two-thirds of the DVW is located in Pennsylvania with the remainder situated in Delaware. The Site itself has been utilized for manufacturing a variety of chemicals since it was established nearly 100 years ago. The Site is currently an active chemical manufacturing operation, producing boron trifluoride (BF_3) and fluorosulfonic acid (FSA). The DVW is surrounded by the Marcus Hook Industrial Complex (MHIC) (f.k.a Sunoco, Inc. – Marcus Hook Refinery or Sun Refining & Marketing Co. – Marcus Hook) to the north and south and Braskem to the east. An Amtrak rail right-of-way forms the northern property boundary, separating the Site from MHIC property in the north, and Philadelphia Pike (Route 13) forms the southern boundary. MHIC and the Chemtrade (f.k.a. General Chemical Corporation or GCC) property are located across Philadelphia Pike to the south. A separate 16-acre parcel of the DVW property, SWMU 9, is located on the Delaware River east and south of the Chemtrade property.

2.2 SWMU/AOC DESCRIPTIONS

There are 13 SWMUs and two AOCs on the DVW and SWMU 9 (located on a separate parcel), that are subject to the RFI (see **Figure 2** for SWMU, AOC, and existing monitoring well locations). Detailed descriptions of each SWMU and AOC were presented in the June 2015 RFI Work Plan and April 2016 RFI Report.

2.3 REGULATORY HISTORY

The DVW has been an industrial facility for nearly 100 years. Over its history, the DVW manufactured various chemical products including pesticides, organic and inorganic acids, and specialty chemicals. Currently, the DVW produces two materials: BF_3, a reaction catalyst used in a variety of process applications, and FSA.

Based on the treatment, storage, and disposal of hazardous waste at the DVW, a Notification of Hazardous Waste Activity was submitted to USEPA on July 28, 1980. This submittal triggered several notifications/events, including the following:

- On November 11, 1980, Allied Chemical Corporation submitted a RCRA Part A Hazardous Waste Permit Application to USEPA for the DVW.
- On March 11, 1982, USEPA acknowledged that the DVW qualified for Interim Status.
- On August 15, 1983, AlliedSignal submitted a RCRA Part B Permit Application to the Pennsylvania Department of Environmental Resources (PADER), currently known as the Pennsylvania Department of Environmental Protection (PADEP).

- On September 5, 1985, the Part B Permit Application for the DVW was withdrawn.
- In June 1986, AlliedSignal completed a RCRA Facility Assessment (RFA) in which 14 SWMUs and one AOC that are part of this study were identified on what is now DVW property.
- In 1999, USEPA Region III issued an Administrative Order on Consent (ACO) to GCC to conduct a RFI on property that included property later sold to Honeywell.
- On December 15, 1999, USEPA Region III issued a letter requesting that Honeywell enter the RCRA Facility Lead Corrective Action Program. Honeywell accepted USEPA's request by letter dated December 15, 1999.
- In 2003, Honeywell conducted a Phase I RFI at eight of the SWMUs (9, 13, 14, 15, 17, 18, 19, and 20) identified at the DVW in accordance with the Facility Lead RCRA Corrective Action Revised Workplan dated October 2002. In addition, in 2003, GCC conducted a RFI at SWMUs and AOCs located on portions of the DVW that would eventually be re-acquired by Honeywell (SWMUs 16, 21/22/30, 23, 27 and AOC 3).
- In 2004 and 2005, Honeywell conducted a Phase II RFI that included additional SWMU specific assessment activities at SWMUs 13, 14, 15, 19, and 20 located on the portions of the DVW owned by Honeywell at that time and monitoring well installation for both SWMU specific and site-wide groundwater quality assessments. The Phase II RFI activities were performed in accordance with the USEPA approved Workplan Addendum dated June 2004 and revised based on the August 2004 USEPA comments to the Workplan.
- In 2005, Honeywell acquired the GCC North Plant, part of the GCC property at the DVW.
- In 2008 and 2009, Honeywell conducted an investigation of AOC 16NP as part of the ongoing RFI after discovery of debris and hazardous constituents during installation of a weather tower foundation.
- On September 2, 2011, Honeywell signed the ACO. The ACO included, among other things, participation with GCC in the development and implementation of Interim Remedial Measures in the sluiceway on the GCC property and for sediments in the Delaware River adjacent Honeywell's property and GCC property.
- In December 2011, Honeywell submitted the RFI Work Plan for the DVW.
- On March 31, 2014, Honeywell submitted the Corrective Action Framework Technical Memorandum to USEPA for the DVW, which was used as the partial basis for revising this Work Plan. Several COC "surrogates" were selected from historical soils and groundwater RFI data and screened to identify where concentrations exceeded the current Regional Screening Levels (RSLs). The results of this screening were used to identify SWMUs and AOCs where a corrective action (CA) can be identified without collection of further RFI data, and where RFI work remains to be completed.
- On August 28, 2014, Honeywell met with the USEPA to present the Source Assessment Methodology findings, and to gain approval for the investigative actions. Three example SWMUs were presented with their data usability results, chemicals

of potential concern (COPC), and soil source evaluations and graphic depictions of the evolution of the understanding of the limits of "waste". These results were the result of a process developed to define the limits of each SWMU or AOC and define the remaining scope of work necessary to complete the RFI.

- Following the August 28, 2014 meeting, the USEPA was provided with draft proposed work scope packages for each SWMU and AOC, and following review, indicated its concurrence with all proposed draft work scopes.
- On June 16, 2015, Honeywell submitted a RFI Work Plan which addressed 14 SWMUs, two AOCs, and Site-wide groundwater. The work plan was approved by the USEPA in a letter dated July 7, 2015 and implemented from July through October 2015. The RFI Report summarizing the work completed was submitted to USEPA on April 12, 2016.
- On September 21, 2017, Honeywell met with the USEPA and discussed an interim measure for SWMU 9. A CAO matrix for SWMU 9 developed using RCRA FIRST Tool 7 was submitted to the USEPA on November 14, 2017.
- On May 11, 2018, Honeywell submitted a SWMU 9 Data Summary Report developed using RCRA FIRST Tool 4 to USEPA.
- On June 28, 2018, Honeywell submitted a SWMU 9 Geotech Investigation Work Plan.
- On January 8, 2019, Honeywell submitted a SWMU 9 Geotechnical Investigation Report.

The April 12, 2016 RFI Report included the following conclusions relevant to the scope of work outlined herein:

1. Groundwater data indicate a previously unidentified source of VOCs located in the vicinity of MW-6. The data do not support a source of these VOCs being located at the documented SWMUs on the DVW. Additional investigation was recommended to locate this unidentified source.
2. Analytical modeling of select VOCs was performed using the Quick Domenico fate and transport model to assess the potential for contaminant migration in groundwater across the downgradient property boundary [Route 13]. Breakdown products, such as vinyl chloride, from chlorinated solvents including PCE and TCE are present in groundwater. Groundwater elevation data were used to construct contour maps that were then divided into six flow zones (Areas 1 through 6). VOC analytes selected for modeling represented the more mobile compounds present within individual flow areas. The Area 5 model results indicated that concentrations of trichloroethene (TCE) above RSLs could potentially extend a distance of approximately 100 feet and that concentrations of vinyl chloride above RSLs could potentially extend a distance of approximately 555 feet from the Site boundary in a south-southeast direction. The Area 6 model results indicated that concentrations of vinyl chloride above RSLs could potentially extend a distance of approximately 160 feet from the Site boundary in a south-southeast direction.

3. The results of the Baseline Human Health Risk Assessment (BHHRA), currently under review by EPA, indicate that an assessment of potential soil vapor intrusion into certain occupied structures at the Site should be conducted to verify that occupant exposures are acceptable.

These conclusions presented in the April 2016 RFI Report were referenced by USEPA, in a letter dated May 22, 2018, requesting this Work Plan.

2.4 PREVIOUS INVESTIGATIONS

Previous RFI investigations are documented in the following reports submitted to the USEPA.

1. RFI Data Summary Report, Honeywell Facility, Claymont, Delaware (MWH Americas, Inc., October 2003)
2. Summary of Presentation Items, General Chemical Corporation, Delaware Valley Works Facility, Claymont Delaware (Cummings-Riter, November 7, 2003)
3. Phase II RFI Data Summary Report, Honeywell Delaware Valley Works Facility, Claymont, Delaware (MWH Americas, Inc., May 2005)
4. Soil Vapor Intrusion Investigation, Honeywell Delaware Valley Works, Claymont, Delaware (MACTEC Engineering and Consulting, Inc., December 2008)
5. AOC 16NP Investigation Report, Honeywell International Inc., Delaware Valley Works, Claymont, Delaware (MACTEC Engineering and Consulting, Inc., February 2010)
6. RCRA Facility Investigation Report, Honeywell International Inc., Delaware Valley Works, Claymont, Delaware (Amec Foster Wheeler Environment & Infrastructure, Inc., April 2016)

2.5 PHYSICAL SETTING

Regional Geology

The DVW is located within the Coastal Plain Physiographic Province. The Coastal Plain consists of unconsolidated sediments from the Cretaceous, Tertiary, and Quaternary ages overlying pre-Cambrian bedrock. These unconsolidated sediments consist of gravel, sand, silt, and clay deposits. These sediments thicken eastward towards the Delaware River (Earth Sciences, 1999).

Local Geology

The DVW lies approximately 1 mile east of the Fall Line, which marks the beginning of the Piedmont Physiographic Province. Local subsurface geology is known from boring logs provided by prior investigations. The surficial unit over the majority of the DVW consists of an historic fill material used to create grades for building and to level the site. The historic fill typically ranges from 0 to 7 feet below ground surface (bgs). It is underlain by unconsolidated fluvial deposits of silty clay, which are in turn underlain by sand and gravel deposits of varying thickness. These unconsolidated units extend downward to a weathered bedrock (saprolite) grading into unweathered bedrock. Saprolite and/or bedrock are typically encountered at approximately 16 to 19 feet bgs. At the adjacent Chemtrade property to the south of the DVW, the bedrock dips downward and is reportedly encountered at depths ranging from approximately 16 feet bgs along Philadelphia Pike to as deep as 54 feet bgs along the Delaware River. Saprolitic materials have been identified at depths of 35 feet bgs and greater near SWMU 9.

Regional Hydrogeology

The principal water-bearing zone consists of unconsolidated sand and gravel units of the Coastal Plain Sediments. Inter-bedded silts and clays may create semi-confined hydraulic conditions at depth locally. Recharge of the unconsolidated aquifer occurs mainly in the form of infiltrating precipitation and vertical leakage. The water table aquifer generally follows topography and flows from areas of higher elevation to lower elevations.

Local Hydrogeology

Characteristic of the Coastal Plain sediments of the region, the principle water-bearing zone at the DVW plant consists of an unconsolidated sand and gravel which underlies historical fill materials and discontinuous silty-clay units. Groundwater occurs in these units under water table conditions and was encountered generally between 7 and 13 feet bgs during well installations. Where present, silty-clay units may create locally semi-confined conditions. **Figure 2** is a figure depicting water table elevation contours constructed from data collected during the September 2015 event for the DVW. Groundwater flow direction in the unconsolidated overburden at the DVW is generally towards the south toward the Delaware River discharge boundary, although there are local variations. In the northeastern portion of the DVW, shallow groundwater flows to the southeast. In the central portion of the DVW, shallow groundwater flows to the south-southwest. In the southwestern portion of the DVW, shallow groundwater flows to the south-southeast. The hydraulic gradient is estimated to be 0.004 to 0.007 feet/feet (ft/ft) in the northeastern and central portions of the DVW and 0.01 ft/ft in the southwestern portion of the DVW based on the 2015 data. Groundwater mounding is apparent in the area of monitoring wells SM19-MW2 and SM20-MW1 in the central portion of the DVW. The cause of the mounding is unknown. A relatively high water table elevation was also observed in monitoring well EWL-08 in the northwestern portion of the DVW.

Historical investigations have suggested that the Delaware River is also a discharge boundary for the uppermost bedrock, creating an upward hydraulic gradient between the bedrock and unconsolidated aquifers (Earth Sciences, 1999).

The potable water at the DVW plant is obtained from the Chester Water Authority in Chester, Pennsylvania. No production or potable wells were identified within a 0.5 mile radius database search conducted by Delaware Department of Natural Resources and Environmental Control (DNREC) and PADEP. Activities at the adjacent Sun Oil refinery within the MHIC are reported to have impacted local groundwater quality (Earth Sciences, 1999) and may have impacted groundwater in the northeast quadrant of the DVW.

Surface Water

The DVW plant is located approximately 3,000 feet upgradient of the Delaware River discharge boundary. The Delaware River, which is tidally-influenced, flows from north to south forming the south boundary SWMU 9 and the Chemtrade property. Storm water from the DVW, Philadelphia Pike, and the Chemtrade property is discharged into storm sewers that ultimately discharge to the sluiceway on the Chemtrade property. The sluiceway extends approximately 1,800 feet south through the Chemtrade property and along the western perimeter of SWMU 9 to its outfall in the Delaware River. The outfall is a National Pollutant Discharge Elimination System (NPDES) discharge point maintained and monitored by Chemtrade.

2.6 CONCEPTUAL SITE MODEL

The June 16, 2015 RFI Work Plan presented a preliminary Conceptual Site Model (CSM) for the DVW to identify potentially complete current exposure pathways, and current and reasonably expected future receptors. The DVW is an operating chemical manufacturing facility with 24-hour security staff, controlled access, security fencing, and video surveillance. Photo-identification is worn by all authorized Site personnel. Consequently, while trespassing on the site is a possibility, it is unlikely that a trespasser would be able to gain access and remain on the property undetected.

The DVW plant is located within an area zoned for heavy industry and is surrounded on all sides by refineries or other heavy industrial facilities. Residential use and residential populations as receptors are not reasonably expected future exposure scenarios.

The DVW plant property, with the exception of SWMU 9, is distant from the nearest water body that might serve as a habitat. The Delaware River is located approximately 3,000 feet to the south. Storm water drainage from the DVW plant is conveyed to the Delaware River via storm sewers and a sluiceway. These features were remediated in 2011 and 2013, respectively, and an Interim Measure for remediation of sediment in the Delaware River adjacent to SWMU 9 is being designed. On the plant itself, there are no undeveloped or native vegetation areas that might serve as habitat for wildlife, although the vegetation that covers SWMU 9, in view of its remoteness from human activities, serves as habitat. Consequently ecologic exposure scenarios are not of concern on the DVW plant, but were considered on SWMU 9.

Based on discussions held with USEPA during the August 28, 2014 scoping meeting and the current and reasonably expected current and future site use, the receptor populations with the potential to be exposed to the COCs include:

- Site Workers
- Construction Workers
- Trespassers
- Ecologic Receptors (SWMU 9 only)

The SWMUs/AOCs are locations where disposal of hazardous constituents is known or believed to have historically occurred. Potential pathways for hazardous constituents to migrate away from the SWMUs/AOCs include:

- Surficial erosion of particulates due to storm water runoff and wind;
- Migration of hazardous constituents from their disposal location into subsurface soils under the forces of gravity;
- Volatilization of hazardous constituents into the air or soil vapor; and
- Leaching of hazardous constituents from the waste mass or underlying soils into groundwater with migration down gradient as part of the groundwater flow. With the exception of SWMU 9, discharge of dissolved constituents in groundwater to surface water is not a currently complete pathway on the Site due to the distance between the Site and the Delaware River.

The 2016 BHHRA, currently under review by EPA, evaluated exposure scenarios and current and reasonably expected future receptors associated with these migration pathways and concluded the following:

- Soil exposure scenarios would include Site and construction workers and adult and child trespassers exposed to surface soil (0 to 2 feet) and construction workers for soil at depths from 0 to 10 feet at DVW and 0 to 15 feet at SWMU 9 via incidental ingestion, inhalation of airborne particulates, inhalation of ambient vapors, and dermal contact. Site workers also have the potential for inhalation of groundwater vapors through indoor air, although this potential may be mitigated by intermittent occupancy and ventilation conditions in many of the Site buildings.
- Residential exposure to soil and groundwater, and exposure to groundwater as a drinking water source, were eliminated from the risk assessment due to current and foreseeable future industrial land use conditions.

3.0 SCOPE OF WORK

The following sections describe the specific tasks required to complete the proposed Scope of Work. The work will be conducted in accordance with the Standard Operation Procedures (SOPs) included in Appendix A of the January 2015 RFI QAPP approved by USEPA, plus update pages (see **Appendix A**).

3.1 SYNOPTIC ROUND OF WATER LEVELS

Wood will conduct a synoptic round of water levels from existing monitoring wells (see **Figure 2**). The water level data will be used to develop a current groundwater contour map to aid in the inference of potential source(s) of VOCs near MW-6 and groundwater delineation at Areas 5 and 6. Water levels will be collected in accordance with SOP S-6 from a total of 47 wells listed below.

- MW-01
- MW-03
- MW-04
- MW-05
- MW-06
- MW-07
- MW-08
- MW-09
- MW-12
- MW-13
- MW-102
- MW-103
- MW-104
- MW-112
- MW-116
- MW-117
- EWL-05
- EWL-08
- SM13-MW1
- SM14-MW1
- SM14-MW2
- SM15-MW1
- SM15-MW2
- SM16-MW1
- SM16-MW2
- SM17-MW1
- SM17-MW2
- SM18-MW1

- SM19-MW1
- SM19-MW2
- SM20-MW1
- SM20-MW2
- SM20-MW3
- SM21-MW1
- SM21-MW2
- SM22-MW1
- SM22-MW2
- SM23-MW1
- SM27-MW1
- AOC16-MW1
- AOC16-MW2
- DVW South Plant wells MW-101, MW-103, MW-105, MW-107, MW-109, and MW-112

3.3 SURFACE GEOPHYSICAL SURVEY

Prior to any intrusive work, Wood will contact PA-One Call to locate public utilities. In addition, a surface geophysical survey will be conducted in all proposed sampling areas to evaluate soil boring and monitoring well locations for subsurface features (tanks, utilities, piping, etc.) and the first 5 feet of the boring will be air-knifed prior to drilling. The locations of the proposed soil borings and monitoring wells may be modified based on the results of the surface geophysical survey.

3.4 MW-6 VOCS SOIL BORINGS

The objective of the MW-6 VOCs soil borings task is to attempt to locate and delineate the unidentified source of VOCs observed in monitoring well MW-6 via the collection of soil and groundwater samples. Sampling and analysis will be conducted in accordance with the methods included the USEPA-approved QAPP.

Soil borings which intersect the water table are considered wells in the State of Delaware and must be permitted. Wood will contract a Pennsylvania and Delaware-licensed well driller to conduct soil boring activities in the area of MW-6 since MW-6 is near the border of the two States. The driller will obtain well permits for each boring on the Delaware side in accordance with DNREC requirements.

Wood will install 14 soil borings in accordance with SOP S-15 in the area of MW-6 (see **Figure 3**). The borings will be installed using direct push technology (i.e., Geoprobe®), with the first 5 feet of the subsurface cleared using an air knife. The borings will then be off-set adjacent to the cleared location so that the first 5 feet can be sampled. For borings installed in paved areas, a concrete coring machine will be used to core through the concrete prior to installing the boring. Conditions permitting, the borings will be installed to refusal or into groundwater, which is expected to be at a depth of approximately 10 feet bgs. Any non-disposable equipment that could potentially come into contact with samples will be decontaminated prior to use by using Alconox® (or similar) followed by a distilled or potable water rinse in accordance with SOP S-4.

Soil borings will be advanced continuously using direct push drilling methods to using a Geoprobe®. Materials recovered from borings will be inspected by the field geologist for presence (or absence) of waste materials, staining, and other visual or olfactory indicators of impacts, and will be screened using a photo-ionization detector (PID). Key observations made by the field geologist at every boring included:

- Depth of first encounter with groundwater; and,
- Visual or other evidence of waste materials;
- The boundary between fill or waste materials and native soils.

The field geologist will select soil samples based upon visual, olfactory, and PID screening for laboratory analyses according to these criteria:

- No soil samples will be collected from below the water table for laboratory analyses.
- For the purpose of horizontal delineation, the soil samples will be selected to be representative of native material beyond the horizontal limits of any distinguishable waste materials.
- For the purpose of vertical delineation, the subsurface soil sample intervals will be selected to be representative of:
  - Native material beyond the vertical limit of waste.
  - If waste materials or gross impacts from waste materials extended below first encounter with groundwater, drilling will continue until native soils are encountered and assumed to be impacted to that depth.

Up to two samples per boring are estimated to be collected for submittal for laboratory analysis. The actual number of samples analyzed will be based on field observations.

One groundwater sample will be collected from each boring by installing a temporary PVC screen inside the boring in accordance with SOP S-15. A peristaltic or submersible pump will be used to pump groundwater from the boring for the purpose of removing fines. Once field observations indicate that the groundwater has cleared a groundwater sample will be collected from the pump. The groundwater does not need to be clear of all fines prior to sampling, but enough so that the turbidity does not cause air bubbles in the sample.

Soil and groundwater samples will be submitted for laboratory analysis by a Pennsylvania-licensed laboratory for VOCs via USEPA Method 8260 and pesticides via USEPA Method 8081B.

Duplicate samples will be collected at a rate of 10% (one sample per 10) and analyzed for VOCs via USEPA Method 8260 and pesticides via USEPA Method 8081B. Matrix Spike/Matrix Spike Duplicate (MS/MSD) analysis will be collected at a rate of 5% (one sample per 20) and analyzed for VOCs via USEPA Method 8260 and pesticides via USEPA Method 8081B. One trip blank per shipment of samples will also be collected and analyzed for VOCs via USEPA Method 8260. If non-disposable equipment is used to sample, equipment blanks will be collected at a rate of 10% (one sample per 10) by pouring laboratory-provided DI water over the decontaminated equipment and submitted for analysis for VOCs via EPA Method 8260 and pesticides via USEPA Method 8081B. Chain-of-custody will accompany the field samples at all times, from the time the samples are collected until final analysis at the laboratory.

Table 1 summarizes the general sampling and analysis plan for the proposed RFI Phase IV borings and monitoring wells in the MW-6 area. Soil borings proposed for the MW-6 area are depicted on **Figure 3**. Sample locations may be modified based on the results of the surface geophysical survey.

Decontamination fluids and pumped groundwater will be containerized for eventual offsite disposal at a licensed facility. Soil cuttings will be containerized and staged at a Honeywell designated location on the Site for eventual offsite disposal at a licensed facility. Boreholes will be backfilled with a neat grout mixture. The pavement coreholes will be backfilled with cement.

Based on the initial soil and groundwater results, additional delineation borings and sampling may be recommended.

Multiple lines of evidence will be used to demonstrate that the source area(s) has been identified and delineated. These lines of evidence will include the background concentrations, distance from source areas, concentration gradients, comparisons to screening criteria, and depth considerations.

3.6 MONITORING WELL INSTALLATION

Two wells will be installed downgradient of Areas 5 and 6, one downgradient of existing well MW-13 and one downgradient of existing well SM13-MW1 (see **Figure 4**). The results of the direct push sampling at the MW-6 area will be evaluated and, based on these results, permanent groundwater monitoring wells will be installed to assess the extent of groundwater impact during a second field mobilization. The results will be provided to the USEPA via an interim report, along with proposed permanent monitoring well locations at the MW-6 area for approval.

The wells will be installed in accordance with SOP S-11 and constructed of 2-inch diameter PVC with approximately 7 feet of screen below the water table and 3 feet of screen above the water table to allow for approximately 2 feet of sandpack above the top of screen and approximately 2 feet of bentonite above the sandpack. The annular space above the bentonite will be grouted with Portland cement or Portland cement /bentonite slurry to the top of the well. Each monitoring well will be completed with either a stick-up or a flush-mounted steel lid and concrete pad, depending on its location.

Cuttings produced during well construction will be containerized for eventual offsite disposal at a licensed facility.

The monitoring wells will be developed by pumping and surging to remove sediment that may have accumulated during well installation, to consolidate the filter pack around the well screen, and to enhance the hydraulic connection between the target zone and the well. Development of the monitoring well will take place no sooner than 24 hours following the grout seal placement using a submersible pump and surge block. The pump and surge block will be deconned (by drillers) prior to arrival onsite. The pump will be lowered into the well to mid-screen and the water will be pumped and containerized for disposal. Surging will be conducted slowly to reduce disruption to the filter pack and screen. The well will be considered fully developed with all of the following criteria have been met:

- Discharge water is clear to the unaided eye;
- Sediment thickness remaining in the well is less than one percent of the screen length; and
- Total volume of water removed from the well equals five times the standing water volume in the well (including the well screen and casing plus saturated annulus, assuming 30 percent porosity).

Well development water will be containerized for eventual offsite disposal at a licensed facility.

3.7 GROUNDWATER SAMPLING

Following completion of the soil boring and the Geoprobe® groundwater sampling, a groundwater sampling event using permanent groundwater monitoring wells will be conducted in accordance with SOP S-1 in the MW-6 VOCs area and the Area 5 and 6 to confirm the temporary point groundwater sampling results and evaluate current groundwater quality conditions in those areas. The following wells are proposed for sampling:

- MW-6 VOCs Area
  - MW-6
  - MW-5
  - SM17-MW1
  - SM20-MW2
  - SM20-MW3
  - Newly installed wells
- Areas 5 and 6
  - SM14-MW2
  - SM13-MW1
  - MW-1
  - MW-13
  - Two newly installed wells (A5-01 and A6-01)

Prior to sampling of the wells, initial depth to groundwater and depth to product (if applicable) will be measured with an interface probe. The interface probe and pump, and any other non-disposable equipment, will be deconned prior to lowering it into the well using Alconox® (or similar) followed by a distilled or potable water rinse.

Table 1 provides the parameter suites for laboratory analyses of groundwater. **Figure 2** depicts the locations of the wells to be sampled.

Low flow methods will be used to conduct groundwater sampling in accordance with SOP S-1. A peristaltic or submersible impeller driven (e.g., Whale or Monsoon) pump will be lowered in the well with the intake set at the midpoint of the water column and the tubing connected to the flow-through cell. Purging will be conducted at a rate of less than 500 milliliters per minute (ml/minute) with the water level monitored during purging to maintain not more than 0.3 feet of head change. During the purging process, process water quality parameters dissolved oxygen, oxidation/reduction potential (ORP), conductivity/specific conductance, temperature, pH, turbidity, and water level will be measured and recorded at least every five minutes. Purging will continue until monitoring parameters stabilized after three consecutive readings within the following limits:

- Turbidity - +/- 10% for values greater than 10 NTU; if turbidity is greater than 10 and the well does not stabilize continue purging well for up to two hours, collect sample, and document on field data record and in log book
- Dissolved Oxygen - +/- 10%
- Specific Conductance -+/- 3%
- Temperature - +/- 3%
- pH - +/- 0.1 standard units
- ORP - +/- 10 mV
- Water level - <0.3 feet

After the parameters have stabilized to the above criteria, a groundwater sample will be collected using low flow methodology in accordance with SOP S-1. Samples will be submitted for analysis for VOCs via USEPA Method 8260, SVOCs via USEPA Method 8270, pesticides via USEPA Method 8081B, and metals via USEPA Method 6010C/7470A.

Duplicate samples will be collected at a rate of 10% (one sample per 10) and analyzed for VOCs, SVOCs, pesticides, and metals. One trip blank per shipment of samples will also be collected and analyzed for VOCs. If non-disposable equipment is used to sample, one equipment blank will be collected at a rate of 10% (one sample per 10) by pouring laboratory-provided DI water over the decontaminated pump and submitted for analysis for VOCs, SVOCs, pesticides, and metals. MS/MSD samples will be collected at a rate of 5% (one sample per 20). A chain-of-custody will accompany the field samples at all times, from the time the samples are collected until final analysis at the laboratory.

Based on the groundwater results, additional delineation sampling may be required.

Multiple lines of evidence will be used to demonstrate that the nature and extent of the impact to groundwater has been delineated. These lines of evidence will include the background concentrations, distance from source areas, concentration gradients, comparisons to screening criteria, and depth considerations.

3.8 SOIL VAPOR INTRUSION

The purpose of the soil vapor intrusion task is to assess soil vapor intrusion within occupied structures at the Site as recommended based on the results of the BHHRA included with the April 2016 RFI Report submittal.

The soil vapor intrusion assessment will be conducted in a phased approach in accordance with USEPA guidance[1]. The USEPA guidance uses conservative attenuation factors and screening levels that are protective of human health and emphasizes the use of multiple lines of evidence to evaluate the potential for a vapor intrusion risk and to support conclusions for further action. The USEPA recommends that the investigation work plan include the identification of and basis for indoor air screening levels, such as the USEPA's vapor intrusion screening levels (VISLs), which would dictate the sampling and analysis methods. The primary objective of risk-based screening is to identify sites or buildings unlikely to pose a health concern through the soil gas intrusion pathway. Generally, at properties where subsurface concentrations of vapor-forming chemicals, such as those in groundwater or "near source" soil gas, fall below the recommended screening levels (i.e., VISLs), no further action or study is warranted[1]. The proposed vapor intrusion evaluation steps are as follows:

1. Screening of existing groundwater data using the USEPA VISL calculator, a generic screening level calculator to evaluate the need for soil gas sampling (https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator). The results of this screening step are included in this Work Plan (see **Existing Data Evaluation** below).
2. Sub-slab soil gas (SSSG) sampling, with the collection of indoor air (IA) and outdoor air (OA) samples at the same time.
3. Review of soil gas sampling results to evaluate the need to analyze the IA samples.

A comprehensive inventory of the buildings at the Site is provided in **Table 2**, including rationale for sampling. The buildings that will be sampled are shown on **Figure 5**.

[1] OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air, USEPA, Office of Solid Waste and Emergency Response, June 2015

Existing Data Evaluation

The VISL calculator was used as a screening method to assess indoor air concentrations based on the most recent groundwater concentrations for wells within a 100-foot radius of occupied buildings in accordance with USEPA guidance, assuming the following:

- Hazard quotient of 0.1
- Target risk of 1 x 10^{-6}
- Commercial exposure
- Site-specific screening level
- Default groundwater temperature

For buildings with more than one well within 100 feet, the highest concentration for each detected VOC was used. Individual VISL calculator runs were used to evaluate each of the monitoring well samples. Only detected compounds from each location were used as input values so that the corresponding indoor air concentration, VI carcinogenic risk (CR), and VI hazard quotient (HQ) could be calculated.

To comply with concerns regarding cumulative risks and hazards, individual VOCs CR and HQ values for each sample location was then summed to get a cumulative CR and a Hazard Index (HI), respectively. The cumulative CR values was compared to USEPA's acceptable range of 1.00E-06 to 1.00E-04. The HI was compared to USEPA's threshold value of 1, conservatively assuming that the hazards were additive and all VOCs acted on the same target organ system. The screening results are summarized in **Table 3** below and the VISL outputs are included in **Appendix D**. Monitoring well locations and results are provided in **Table 4.**

Table 3 VISL Results

Building	Well and Distance from Building	Cumulative Carcinogenic Risk (CR)	Cumulative Hazard Quotient (HQ)	Sub-slab Soil Gas Sampling Recommended
Building 7	MW-104 (87.7 feet)	1.01E-04	5.33E+00	Yes
Admin Building	MW-04 and MW-05 (16.9 and 74.7 feet)	2.32E-07	3.73E-02	No
Building 23 Warehouse	MW-08 (43.9 feet)	5.63E-08	7.01E-05	No

BF_3 Control Room	SM19-MW1 and SM19-MW2 (44.6 and 36.7 feet)	4.40E-05	1.58E+01	Yes
Building 37	MW-08, SM16-MW01, and SM16-MW02 (20, 40, and 80 feet)	5.57E-02	1.81E+04	Yes
Building 17	SM20-MW02 (20 feet)	9.39E-07	3.36E-02	No
Building 16	SM22-MW02 (50 feet)	1.09E-05	2.79E+00	Yes
Building 15	SM23-MW01 (10 feet)	5.84E-06	2.54E-01	Yes
Storeroom/ Garage	MW-06. SM17-MW01, SM17-MW02, SM20-MW-1, and SM20-MW02 (90, 10, 100, 70, and 60 feet)	2.65E-03	2.42E+02	Yes

Sample Collection

Two rounds of SSSG samples will be collected (one in the heating season and one in the cooling season). Samples will be collected in accordance with SOP S-17. A minimum of one Summa canister will be used per 20,000 square feet (sf) of building area, time integrated for an eight-hour sampling period (6 Liter canisters will be needed with an approximate flow rate of 11.25 ml/min). A minimum of 3 locations will be sampled for buildings less than 20,000 sf.

Prior to the sampling event, a building survey will be conducted to evaluate potential impacts to indoor air sampling (e.g., potential sample contaminants) and Honeywell occupants will be provided a summary of the sampling procedures and instructions to follow at least 48 hours prior to and during the sampling event (e.g. do not smoke, do not use cleaning products, and keep doors and windows closed). Indoor air sampling will be conducted in accordance with SOP S-17 included in Appendix A of the QAPP, including the completion of an Indoor Air Building Survey Form and a Sampling Form (see **Appendix A**).

All samples will be collected using individually certified, 6-liter Summa™ canisters with initial vacuum readings of no less than -26 inches of Mercury ("Hg). SSSG sample flow rates will be set for an approximate flow rate of 11.25 and milliliters per minute (ml/min) for primary samples, corresponding to a sample collection time of 8 hours. Duplicate samples will be set to an approximate flow rate of 22.5 ml/min, corresponding to a sample collection time of 8 hours. Sample flow rates of the IA and OA samples (one per building) will be set to an approximate flow rate of 11.25 ml/min, corresponding to a sample collection time of 8 hours.

Helium will be used as a tracer gas to verify there are no leaks in sampling setup. Helium will be applied into a shroud until the atmosphere within the shroud is between 15-20% helium, as measured by a helium detector. The system will be purged using a vacuum pump and a helium detector will be used to estimate the presence of helium in the purge line. If the helium concentration within the tubing is less than 10% of the concentration within the shroud atmosphere, the seal will be considered leak-tight. If a leak is detected, the system will need to be reset and the helium leak check will need to be performed again.

Following sample collection, the Summa™ canisters will be submitted for laboratory analysis for VOCs via method TO-15. IA samples will be held, pending the results of the evaluation of data from the SSSG sampling (see **Data Evaluation** below). A 7-day turnaround will be requested; the hold time for the Summa canisters is 14 days. For those VOCs exceeding soil vapor screening criteria, IA will be analyzed for those specific VOCs only.

Data Evaluation

Similar to the existing data evaluation task, the VISL calculator will be used to assess indoor air concentrations based on the SSSG results, assuming the following:

- Hazard quotient of 0.1
- Target risk of 1 x 10^{-6}
- Commercial exposure
- Site-specific screening level
- Default groundwater temperature

Individual VISL calculator runs will be used to evaluate each of the soil gas samples. Only detected compounds from each location will be used as input values so that the corresponding indoor air concentration, VI CR, and VI HQ can be calculated.

Individual compound CR and HQ values for each sample location will then be summed to get a cumulative CR and a HI, respectively. The cumulative CR values will be compared to USEPA's acceptable range of 1.00E-06 to 1.00E-04. The HI will be compared to USEPA's threshold value of 1, conservatively assuming that the hazards were additive and all VOCs acted on the same target organ system. The IA samples will be analyzed if necessary based on the results of this evaluation.

4.0 REFERENCED DOCUMENTS

The following documents have been updated to address the Scope of Work included in this Work Plan.

- QAPP (included in **Appendix A**);
- SAMP (included in **Appendix B**); and
- HASP (included in **Appendix C**).

No revisions to the CRP or DMP were required.

5.0 REPORTING

An interim report will be submitted to the USEPA summarizing the results of the direct push sampling at the MW-6 area and at Areas 5 and 6, along with proposed permanent monitoring well locations and any other recommended investigation tasks for USEPA approval. A technical memorandum will be submitted to the USEPA after the first round of SSSG sampling.

Upon completion of the RFI, a Draft RFI Report will be prepared for submittal to USEPA. The RFI Report will include, at a minimum, the following:

- **Introduction.** The introduction will discuss site location, site history, regulatory history, and report organization.
- **Investigation Methods.** A summary of the investigation methods and deviations from the Work Plan, if any, will be provided.
- **Local/Regional Geology and Hydrogeology**. This section will include a description of the geology and hydrogeology, including groundwater flow direction.
- **Data and Results.** A summary of the results will be provided, including tables and figures. All soil and groundwater analytical data will be subjected to data validation in accordance with the QAPP submitted to USEPA in April 2014 and subsequent updates. Data will be compared to the current USEPA RSLs and MCLs; results that meet the Achievable Laboratory Limits presented in the QAPP will be considered non-detect. Figures will include a site map showing sample locations, laboratory analytical results, isocontours, and a groundwater contour map. Boring logs, monitoring well construction logs, and laboratory analytical reports will be provided as appendices.
- **Fate and Transport.** The Quick Domenico models presented in the 2016 RFI Report will be reviewed and updated (if necessary) based on the results of the proposed Scope of Work to evaluate the extent of the groundwater impact downgradient of Areas 5 and 6.
- **Conclusions and Recommendations.** The results of the investigation will be summarized with regard to the objectives of the proposed scope of work (i.e., location and delineation of the previously unidentified source of VOCs in the vicinity of well MW-6, delineation of the groundwater impact downgradient of Areas 5 and 6, and assessment of soil vapor intrusion within occupied structures). Recommendations for next steps, and additional investigations if necessary, will be provided.

6.0 PROJECT MANAGEMENT PLAN

The following sections describe the project team, how it is organized, and the responsibilities of each team member. Additionally, **Section 6.2** describes the schedule for completing the work described herein.

6.1 PROJECT ORGANIZATION AND RESPONSIBILITIES

Figure 6 is an organization chart that presents the key individual assignments that have been selected for this project. A summary of the responsibilities included with each assignment in the organization chart is provided below:

- Project Manager: The Project Manager will be fully responsible and accountable for contractual, technical, and scheduling activities, and will serve as the focal point and main channel of communication between Honeywell and the Wood team. Using the Field Team Leader, as appropriate, the Project Manager will monitor schedule and cost, and coordinate reporting. The Project Manager will also ensure that necessary resources are made available (including personnel, materials, and equipment), the project schedule is maintained, and potential problems or conflicts are identified and resolved in a timely manner. The Project Manager will be responsible for technical oversight of the project, and overall project execution.
- Technical Advisors: The Technical Advisors will provide technical assistance in their respective areas of expertise for specific project components. The Technical Advisors will also review and ensure the technical quality of project deliverables.
- Project Safety Officer (PSO): The PSO will provide the overall direction regarding matters of environmental protection, fire protection, occupational safety and health, industrial hygiene, personal protection from hazardous chemical exposure and permitting for this project. The PSO has the organizational freedom and authority to require changes to work practices, identify problems and proposed solutions, and if necessary, stop work activities that could pose a threat to personnel or the environment. The PSO will coordinate activities with the Project Manager, as appropriate.
- Field Team Leader: The Field Team Leader reports to the Project Manager and is responsible for project set-up of field support services. The Field Team Leader will provide oversight of field investigation tasks and investigation derived waste (IDW) management.

6.2 PROJECT SCHEDULE

Two separate schedules to implement this Work Plan are shown in **Figures 7A** (for the VI portion) and **Figure 7B** (for the groundwater portion) so that the VI and groundwater tasks can proceed so as not to delay one another. The schedule is discussed below. This schedule is subject to change based on contractor availability, location access (e.g., underground utilities identified by the surface geophysical survey), and actual field conditions. The schedules assume heating season sampling in March and cooling season sampling in July for the VI portion and submittal of one Draft RFI Report to the USEPA by November 8, 2019, which will include the results of both the VI portion and the groundwater portion. A separate technical memorandum summarizing the SSSG sampling is planned to be submitted to the USEPA by May 24, 2019 and a separate interim report with proposed permanent well locations is planned to be submitted to the USEPA by May 31, 2019.

1. Within eight weeks of receiving Work Plan approval from the USEPA:

    - Coordinate with onsite workforce for SSSG.
    - Contract laboratory.
    - Mobilize to the Site.
    - Conduct the first round of SSSG sampling (assumed to be in March 2019).
    - Analyze SSSG samples and, if necessary, IA samples.

2. Within 11 weeks of SSSG sampling:

    - Obtain drilling permits.
    - Install soil borings in the MW-6 VOCs area.
    - Receive, review, and validate soil, soil gas, indoor air (if necessary), and groundwater sample laboratory results.
    - Select permanent well locations based on laboratory results.
    - Submit a technical memorandum to USEPA summarizing the SSSG sampling by May 24, 2019.
    - Submit interim report to USEPA with proposed permanent well locations for USEPA approval by May 31, 2019.

3. Within 15 weeks of interim report submittal (assuming 4 weeks for USEPA review):

    - Obtain drilling and road opening permits.
    - Install and develop groundwater monitoring wells.
    - Conduct groundwater sampling from select wells in the MW-6 VOCs area and Areas 5 and 6.
    - Receive, review, and validate groundwater sample results.
    - Conduct the second round of SSSG sampling (assumed to be in July 2019).

4. Within 8 weeks of receiving final laboratory analytical data:

    - Receive, review, and validate sample results.
    - Prepare Draft RFI Report and submit to USEPA by November 8, 2019.

In summary, we expect to complete the proposed Scope of Work and submit the RFI Report to the USEPA within approximately 10 months of receiving USEPA approval of the Work Plan.

7.0 REFERENCES

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TABLES

Table 1. Summary of Samples and Chemical Analyses

RFI Phase IV Work Plan

Honeywell Delaware Valley Works

Claymont, Delaware

		SOIL*	**GROUNDWATER[1]**	**GROUNDWATER[2]**	**AIR**
		TCL- VOCs Pesticides	**TCL-VOCs Pesticides**	**TCL-VOCs TCL-SVOCs Pesticides TAL Metals**	**TO-15**
MW-6	Samples	28	14	9	--
	Field Duplicates	3	2	1	--
	MS/MSD	2	1	1	--
	Equipment Blank	3	2	1	--
Areas 5 and 6	Samples	--	--	2	--
	Field Duplicates	--	--	1	--
	MS/MSD	--	--	1	--
	Equipment Blank	--	--	1	--
Soil Gas	Samples	--	--	--	38
	Field Duplicates	--	--	--	6
Indoor Air	Samples	--	--	--	38
	Field Duplicates	--	--	--	6
Outdoor Air	Samples	--	--	--	12
	Field Duplicates	--	--	--	2

* Up to two soil samples per boring is estimated; actual number will be based on field observations.
1 – Grab groundwater samples from borings.
2 – Groundwater samples from permanent wells; additional samples to be collected from newly installed wells (actual number TBD).
TCL-VOCs - Target Compound List Volatile Organic Compounds.
TO-15 – USEPA Compendium Method TO-15.
USEPA – U.S. Environmental Protection Agency.
-- No sample collected.
MS/MSD - Matrix Spike/Matrix Spike Duplicate Analysis.
Field duplicates and Equipment Blanks will be collected at 10% frequency.
MS/MSDs will be collected at 5% frequency.
TBD – To be determined based on the results of the soil gas sampling.

Table 2. Building Inventory, Honeywell Delaware Valley Works, Claymont, DE

Building No.	Building Name	Square Footage	Slab-on-Grade	Use	Solvent/VOC Use	Full-Time Workers	Part-Time or Incidential Workers	Frequency for Part-Time Workers	Ventilation	VI Sampling Rationale
No Number	Admin Building	5,380	Yes	Offices	No	8 persons for 10 hours per day; 5 days per week	0		5 HVAC systems; one roof mounted; 4 ground level	No; eliminated based on the results of the VISL Calculator
No Number	**BF3 Control Room**	204	Yes	BF3 Production	No	2 to 3 persons; 24 hours per day; 5 days per week	0		Roof mounted HVAC	**Yes; retained based on the results of the VISL Calculator**
No Number	Shed	400	Platform 4 inches above ground	Woodworking	No	0	1	1 hour per week	No HVAC; roll-up garage door; window A/C	No; no full-time workers; minimal use; roll-up garage doors provide ventilation/air exchange
No Number	**Storeroom/Garage North of Admin Building**	7,800	Yes	Vehicle Maintenance	No	1 person; 10 hours per day; 4 days per week	0		Roll-up garage doors	**Yes; retained based on the results of the VISL Calculator**
7	**Guard House**	2,528	Yes	Security	No	2 person per 8-hour shift for 24 hours; a second person for one 8-hour shift	4	10 to 20 hours per week	HVAC; one for each floor	**Yes; retained based on the results of the VISL Calculator**
15	**Training/IC**	11,880	Yes	Training	No	0	1	3 hours per day	HVAC first floor; two outside units	**Yes; retained based on the results of the VISL Calculator**
16	**Sealants Area**	9,050	Yes	Complexes Packaging	Yes	0	2	1 hour per day	Roll-up garage doors	**Yes; retained based on the results of the VISL Calculator**
17	Lab	5,940	Yes	Quality Lab	Yes	1 person; 8 hours per day; 5 days per week	10	1 hour per day; 5 days per week	Ground mounted HVAC; fume hoods in laboratory rooms	No; HVAC and fume hoods provide ventilation/air exchange; eliminated based on the results of the VISL Calculator
17	Maint	5,940	Yes	Maintenance Shop	Yes	6 people; 10 hour per day; 4 days per week	0		Roll-up garage doors	No; roll-up garage doors provide ventilation/air exchange; eliminated based on the results of the VISL Calculator
23	Warehouse	11,520	Yes	Storage	No	1 to 2 people; 10 hours per day; 5 days per week	0		Open bay doors	No; open bay doors provide ventilation/air exchange; eliminated based on the results of the VISL Calculator
37	**Chemical Warehouse**	66,056	Yes	Chemical Storage	No	2 people; 8 hours per day; 5 days per week	0		No HVAC; multiple roll-up garage doors	**Yes; retained based on the results of the VISL Calculator**

Notes: The following buildings are no longer present: 1, 2, 3, 4, 9, 14, 21, and 59.
All other operations are outdoors.

Table 4. Monitoring Well Locations and Results, Vapor Intrusion,
Honeywell-Delaware Valley Works Facility, Claymont, DE

Nearest Building and Distance	**VISL Target Groundwater Concentration**	Administration Bldg 20 ft	Administration Bldg 70 ft	Storeroom/Garage 90 ft	Building 37 20 ft Building 23 40 ft	Guard House 87.7 ft	Building 37 40 ft	Building 37 80 ft	Storeroom/Garage 10 ft	Storeroom/Garage 10 ft	Storeroom/Garage 100 ft
Location **Sample Date**	**Tapwater** **(ug/L)**	**MW-04** **9/22/2015**	**MW-05** **9/21/2015**	**MW-06** **9/30/2015**	**MW-08** **9/21/2015**	**MW-104** **9/23/2015**	**SM16-MW01** **9/24/2015**	**SM16-MW02** **9/24/2015**	**SM17-MW01** **9/28/2015**	**SM17-MW01** **9/28/2015**	**SM17-MW02** **9/24/2015**
Volative Organic Compounds (ug/l)											
1,1,1-Trichloroethane	3,110	0.5 U	0.5 U	100 U	0.5 U	5.0 U	**22000**	77	0.7	0.5 U	10 U
1,1,2,2-Tetrachloroethane	14	0.5 U	0.5 U	100 U	0.5 U	5.0 U	250 U	10 U	0.5 U	0.5 U	10 U
1,1,2-Trichloroethane	3	0.5 U	0.5 U	100 U	0.5 U	5.0 U	**63 J**	10 U	0.5 U	0.5 U	10 U
1,1-Dichloroethane	33	0.5 U	0.5 U	100 U	0.5 U	16	**450**	24	0.5 U	0.5 U	26
1,1-Dichloroethene	82	0.5 U	0.5 U	**280**	0.5 U	5.3	**1900**	35	0.5 U	0.5 U	26
1,2,3-Trichlorobenzene		0.5 U	0.5 U	100 U	0.5 U	5.0 U	250 U	10 U	0.5 UJ	0.5 UJ	10 U
1,2,4-Trichlorobenzene	15	0.5 U	0.5 U	100 U	0.5 U	5.0 U	250 U	5.1 J	0.2 J	0.5 U	3.7 J
1,2-Dichlorobenzene	1,120	0.5 U	0.9 U	**8400**	0.5 U	920	**2500**	75	0.5 U	0.5 U	200
1,2-Dichloroethane	10	0.5 U	0.5 U	100 U	0.5 U	1.1 **J**	**220 J**	6.8 J	0.1 J	0.5 U	10 U
1,2-Dichloropropane	15	0.5 U	0.5 U	100 U	0.5 U	5.0 U	250 U	10 U	0.5 U	0.5 U	10 U
1,3-Dichlorobenzene		0.5 U	0.5 U	100 U	0.5 U	8.0	250 U	10 U	0.5 U	0.5 U	3.1 J
1,4-Dichlorobenzene	11	0.5 U	0.5 U	**72 J**	0.5 U	**100**	**400**	**12**	0.1 J	0.5 U	**25**
1,4-Dioxane	12,500	100 U	100 U	20000 U	100 U	1000 U	50000 U	2000 U	100 U	100 U	2000 U
2-Butanone	941,000	5.0 U	5.0 U	1000 U	5.0 U	50 U	2500 U	100 U	5.0 U	5.0 U	100 U
4-Methyl-2-pentanone	233,000	5.0 U	5.0 U	1000 U	5.0 U	50 U	2500 U	100 U	5.0 U	5.0 U	100 U
Acetone	9,450,000	5.0 U	5.0 U	5800	5.0 U	110	42000	250	5.0 U	5.0 U	100 U
Benzene	7	0.5 U	0.8	**4500**	0.5 U	**240**	**8200**	**910**	0.5 U	0.5 U	**290**
Bromodichloromethane	4	0.5 U	0.5 U	100 U	0.5 U	5.0 U	250 U	10 U	0.5 U	0.5 U	10 U
Carbon Disulfide	521	1.0 U	1.0 U	200 U	1.0 U	10 U	500 U	20 U	1.0 U	1.0 U	20 U
Carbon Tetrachloride	2	0.5 U	0.5 U	100 U	0.5 U	5.0 U	250 U	10 U	0.5 U	0.5 U	10 U
Chlorobenzene	172	1.3 U	80	**14000**	0.5 U	79	250 U	3.4 J	2.5 U	2.6 U	**1500**
Chloroform	4	0.5 U	0.5 U	**990**	0.2 J	3.0 J	**3900**	**180**	0.5 U	0.5 U	10 U
cis-1,2-Dichloroethene		0.5 U	0.1 J	5000	0.5 U	600	62000	7000	12	12	4800
Cyclohexane	429	0.5 U	0.5 U	100 U	0.5 U	1.2 J	250 UJ	18 J	0.5 U	0.5 U	10 UJ
Dibromochloromethane		0.5 U	0.5 U	100 U	0.5 U	5.0 U	250 U	10 U	0.5 U	0.5 U	10 U
Ethylbenzene	15	0.5 U	0.5 U	100 U	0.5 U	4.8 J	**12000**	**1500**	0.5 U	0.5 U	**840**
Freon 113	102	0.5 U	0.6	**140000**	0.5 U	960	**16000**	**1000**	0.5 U	0.5 U	10 U
Isopropylbenzene	373	0.5 U	0.5 U	100 U	0.5 U	5.0 U	250 U	2.3 J	0.5 U	0.5 U	10 U
m+p-Xylene	149	0.5 U	0.5 U	100 U	0.5 U	5.0 U	**26000**	**2100**	0.5 U	0.5 U	**540**
Methyl Tertiary Butyl Ether	1,970	0.5 U	0.5 U	100 U	0.5 U	1.1 J	250 U	10 U	0.5 U	0.5 U	10 U
Methylene Chloride	1,980	0.5 U	0.5 U	**4700**	0.5 U	5.0 U	**50000**	15	0.5 U	0.5 U	10 U
o-Xylene	207	0.5 U	0.5 U	100 U	0.5 U	13	**7100**	**820**	0.5 U	0.5 U	**260**
Tetrachloroethene	24	0.5 U	4.1	**34000**	0.5 U	**230**	**8400**	**110**	0.5 U	0.5 U	10 U
Toluene	8,070	0.5 U	0.5 U	560	0.5 U	5.3	6200	250	0.5 U	0.5 U	360
trans-1,2-Dichloroethene		0.5 U	0.5 U	100 U	0.5 U	3.7 J	60 J	11	0.5 U	0.5 U	4.5 J
Trichloroethene	2	0.5 U	0.4 J	**1700**	0.5 U	**56**	**390000**	280 U	4.4 U	2.6 U	10 U
Trichlorofluoromethane		0.5 U	0.5 U	100 U	0.5 U	5.0 U	250 U	10 U	0.5 U	0.5 U	10 U
Vinyl Chloride	2	0.5 U	0.5 U	**38 J**	0.5 U	**110**	**3800**	**1100**	**2.3**	**2.5**	**3500**
Xylene (Total)	162	0.5 U	0.5 U	100 U	0.5 U	13	**31000**	**2900**	0.5 U	0.5 U	**800**

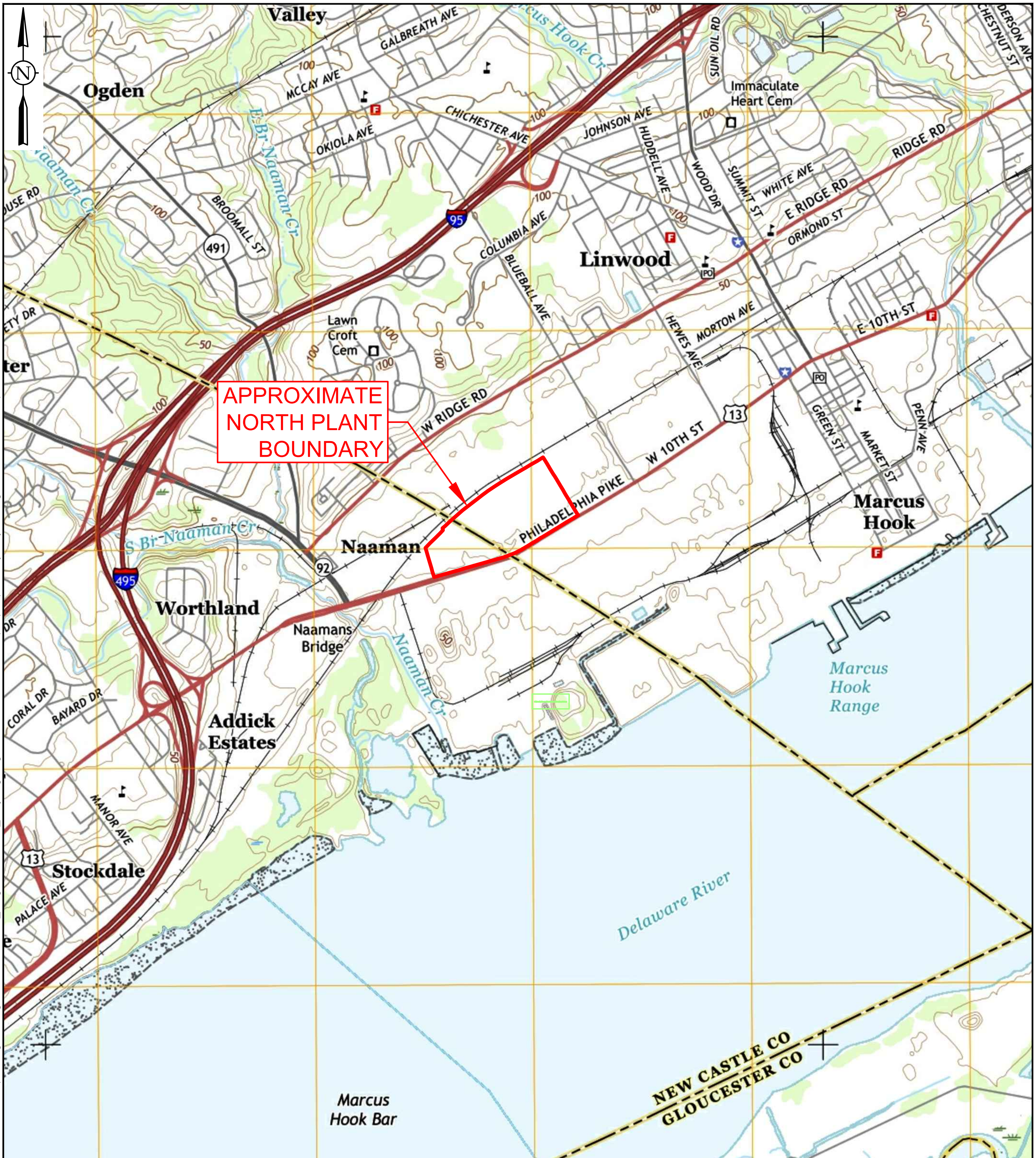
Notes:
U = Undetected
J = Estimated
Bold = exceeds VISL Target Groundwater Concentration

Table 4. Monitoring Well Locations and Results, Vapor Intrusion,
Honeywell-Delaware Valley Works Facility, Claymont, DE

Nearest Building and Distance	**VISL Target Groundwater Concentration**	BF3 Control Room 44.6 ft	BF3 Control Room 36.7 ft	Storeroom/Garage 70 ft	Building 16 30 ft Building 17 20 ft	Storeroom/Garage 60 ft	Building 16 50 ft	Building 15 10 ft
Location	**Tapwater**	**SM19-MW01**	**SM19-MW02**	**SM20-MW01**	**SM20-MW02**	**SM20-MW03**	**SM22-MW02**	**SM23-MW01**
Sample Date	**(ug/L)**	**9/28/2015**	**10/1/2015**	**10/1/2015**	**9/28/2015**	**9/24/2015**	**9/28/2015**	**10/1/2015**
Volative Organic Compounds (ug/l)								
1,1,1-Trichloroethane	3,110	25 U	5.0 U	0.5 U	0.5 U	5.0 U	5.0 U	0.5 U
1,1,2,2-Tetrachloroethane	14	25 U	5.0 U	0.5 U	0.5 U	5.0 U	5.0 U	0.5 U
1,1,2-Trichloroethane	3	25 U	5.0 U	0.5 U	0.5 U	5.0 U	5.0 U	0.5 U
1,1-Dichloroethane	33	25 U	5.0 U	0.5 U	0.5 U	5.0 U	5.0 U	0.5 U
1,1-Dichloroethene	82	25 U	6.7	0.5 U	0.5 U	7.6	5.9	0.1 J
1,2,3-Trichlorobenzene		25 U	5.0 U	0.5 U	0.2 J	29	5.0 UJ	0.5 U
1,2,4-Trichlorobenzene	15	25 U	5.0 U	0.4 J	1.1	**130**	**20**	0.5 U
1,2-Dichlorobenzene	1,120	6.3 J	5.0 U	6.6	200	130	29	0.5 U
1,2-Dichloroethane	10	25 U	5.0 U	0.5 U	0.5 U	5.0 U	5.0 U	0.5 U
1,2-Dichloropropane	15	25 U	5.0 U	0.5 U	0.5 U	5.0 U	5.0 U	0.5 U
1,3-Dichlorobenzene		25 U	5.0 U	0.5 U	0.5 U	5.0 U	1.4 J	0.5 U
1,4-Dichlorobenzene	11	9.0 J	5.0 U	0.2 J	1.0	5.0 U	**59**	0.5 U
1,4-Dioxane	12,500	5000 U	1000 U	100 U	100 U	1000 U	1000 U	100 U
2-Butanone	941,000	250 U	50 UJ	5.0 U	5.0 U	50 U	11000	5.0 U
4-Methyl-2-pentanone	233,000	250 U	50 U	5.0 U	5.0 U	50 U	8800	5.0 U
Acetone	9,450,000	250 U	190	30 U	5.0 U	190	290	5.0 U
Benzene	7	25 U	**33**	1.0	0.7	**56**	**20**	0.2 J
Bromodichloromethane	4	25 U	5.0 U	0.5 U	0.5 U	5.0 U	5.0 U	0.5 U
Carbon Disulfide	521	50 U	24	1.5	1.0 U	10 U	10 U	1.0 U
Carbon Tetrachloride	2	25 U	5.0 U	0.5 U	0.5 U	5.0 U	5.0 U	0.5 U
Chlorobenzene	172	**4600**	15	1.3	21 U	**270**	**830**	0.8 U
Chloroform	4	**24 J**	**4.1 J**	0.2 J	0.2 J	**7.0**	2.9 J	**4.3**
cis-1,2-Dichloroethene		25 U	27	0.9	6.9	200	8.1	15
Cyclohexane	429	25 U	5.0 U	0.3 J	0.5 U	5.0 UJ	1.8 J	0.5 U
Dibromochloromethane		25 U	5.0 U	0.5 U	0.5 U	5.0 U	5.0 U	0.5 U
Ethylbenzene	15	25 U	2.0 J	0.2 J	0.5 U	5.0 U	5.0 U	0.5 U
Freon 113	102	69	2300	6.6	2.7	**1800**	**2100**	2.9 U
Isopropylbenzene	373	25 U	5.0 U	0.5 U	0.5 U	5.0 U	5.0 U	0.5 U
m+p-Xylene	149	25 U	5.0 U	0.5 U	0.5 U	5.0 U	5.0 U	0.5 U
Methyl Tertiary Butyl Ether	1,970	25 U	5.0 U	0.5 U	0.5 U	5.0 U	5.0 U	0.5 U
Methylene Chloride	1,980	25 U	5.0 U	0.5 U	0.5 U	5.0 U	5.0 U	0.5 U
o-Xylene	207	25 U	5.0 U	0.5 U	0.5 U	5.0 U	5.0 U	0.5 U
Tetrachloroethene	24	25 U	5.0 U	0.9 U	0.5 U	**2000**	4.3 J	5.9
Toluene	8,070	25 U	5.0 U	2.4	0.5 U	5.0 U	4.5 J	0.5 U
trans-1,2-Dichloroethene		25 U	1.4 J	0.5 U	0.1 J	1.1 J	5.0 U	0.3 J
Trichloroethene	2	25 U	**230**	0.5 J	1.0 U	51 U	5.0 U	**4.4**
Trichlorofluoromethane		25 U	5.0 U	0.5 U	0.5 U	2.0 J	5.0 U	0.5 U
Vinyl Chloride	2	25 U	1.4 J	0.8	1.7	**95**	**3.4 J**	**9.6**
Xylene (Total)	162	25 U	5.0 U	0.9 U	0.5 U	5.0 U	5.0 U	0.5 U

Notes:
U = Undetected
J = Estimated
Bold = exceeds VISL Target Groundwater Con

FIGURES



LEGEND

APPROXIMATE NORTH PLANT BOUNDARY

SOURCE

USGS QUAD "MARCUS HOOK, PA-DE-NJ", 2016.

0 1000' 2000'

SCALE: 1" = 2,000'

SITE VICINITY

Honeywell

DELAWARE VALLEY WORKS
CLAYMONT, DELAWARE

wood.

751 Arbor Way, Suite 180
Blue Bell, PA 19422

Tel. 610-828-8100
www.woodplc.com

FIGURE 1
SITE LOCATION MAP

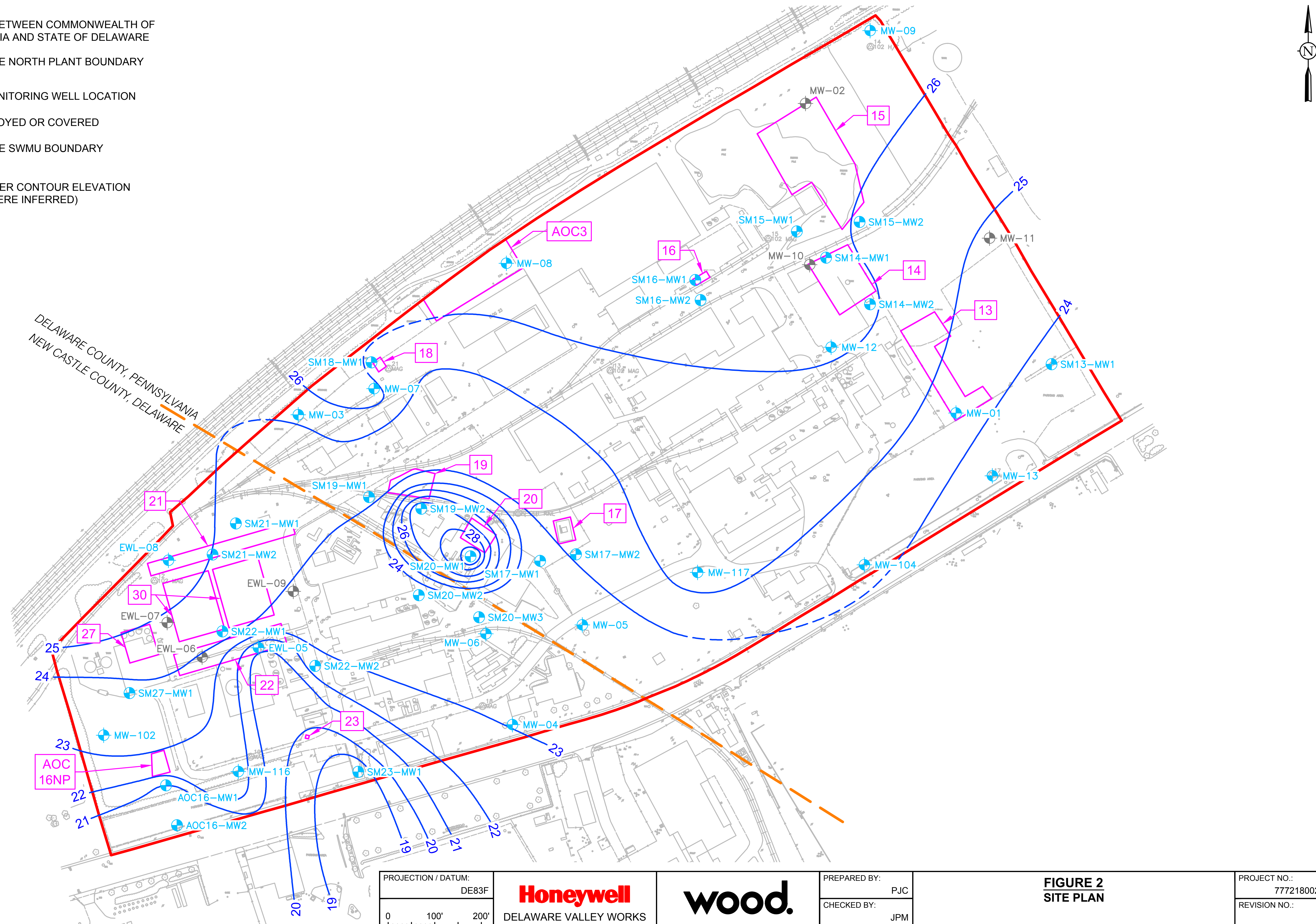
HONEYWELL - DELAWARE VALLEY WORKS
CLAYMONT, DE

PROJECT NO.:	7772180021
PREPARED BY:	PJC
CHECKED BY:	JPM
REVISION NO.:	0
FIGURE NO.:	1

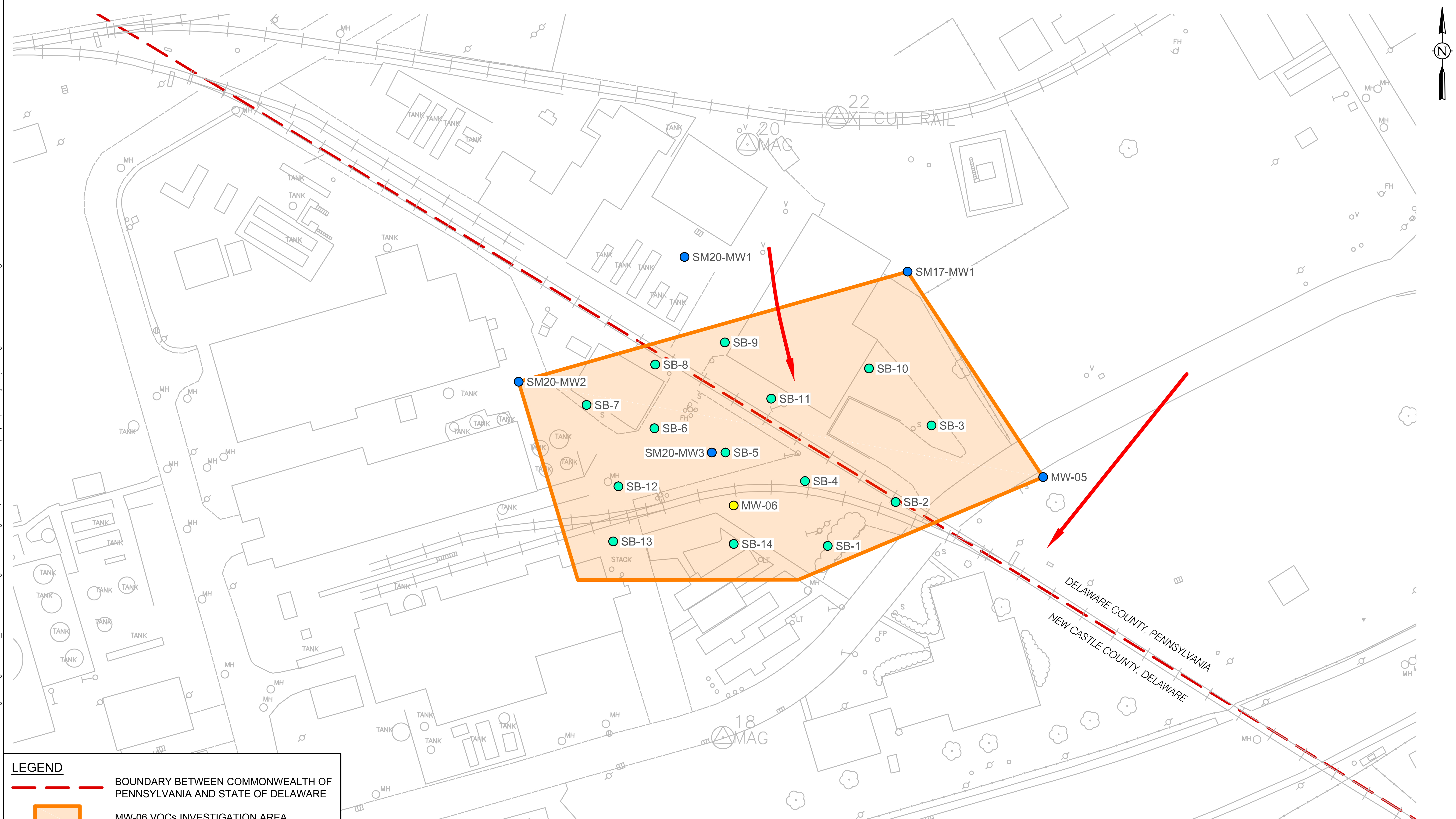
P:\Honeywell - Claymont, DE\North Plant\2018 RFI Workplan\Figures\Fig 1-2-5-6 Site Plan_Bldg Assessment_Proj Org.dwg Wed, 25 Jul 2018 - 5:35pm philip.carney Layout: Fig 1 Site Location Map

LEGEND

- BOUNDARY BETWEEN COMMONWEALTH OF PENNSYLVANIA AND STATE OF DELAWARE
- APPROXIMATE NORTH PLANT BOUNDARY
- EXISTING MONITORING WELL LOCATION
- WELL DESTROYED OR COVERED
- 27 APPROXIMATE SWMU BOUNDARY
- 25 GROUNDWATER CONTOUR ELEVATION (DASHED WHERE INFERRED)



PROJECTION / DATUM: DE83F	Honeywell DELAWARE VALLEY WORKS CLAYMONT, DELAWARE	wood. 751 Arbor Way, Suite 180 Blue Bell, PA 19422 Tel. 610-828-8100 www.woodplc.com	PREPARED BY: PJC	FIGURE 2 SITE PLAN HONEYWELL - DELAWARE VALLEY WORKS CLAYMONT, DE	PROJECT NO.: 7772180021
0 100' 200' SCALE: 1" = 200'			CHECKED BY: JPM		REVISION NO.: 0
			REVIEWED BY: JPM		DATE: JULY 2018



LEGEND

BOUNDARY BETWEEN COMMONWEALTH OF PENNSYLVANIA AND STATE OF DELAWARE

MW-06 VOCs INVESTIGATION AREA

MW-06 — MW-06 LOCATION

SM20-MW1 — MONITORING WELL LOCATION

SB-1 — DIRECT PUSH SAMPLE LOCATION

GROUNDWATER FLOW

PROJECTION / DATUM: NONE 0 25' 50' SCALE: 1" = 50'	Honeywell DELAWARE VALLEY WORKS CLAYMONT, DELAWARE	wood. 751 Arbor Way, Suite 180 Blue Bell, PA 19422 Tel. 610-828-8100 www.woodplc.com	PREPARED BY: PJC CHECKED BY: JP REVIEWED BY: JPM	**FIGURE 3** **MW-06 VOCs INVESTIGATION AREA** **HONEYWELL - DELAWARE VALLEY WORKS** **CLAYMONT, DE**	PROJECT NO.: 7772180021 REVISION NO.: 0 DATE: JULY 2018

LEGEND

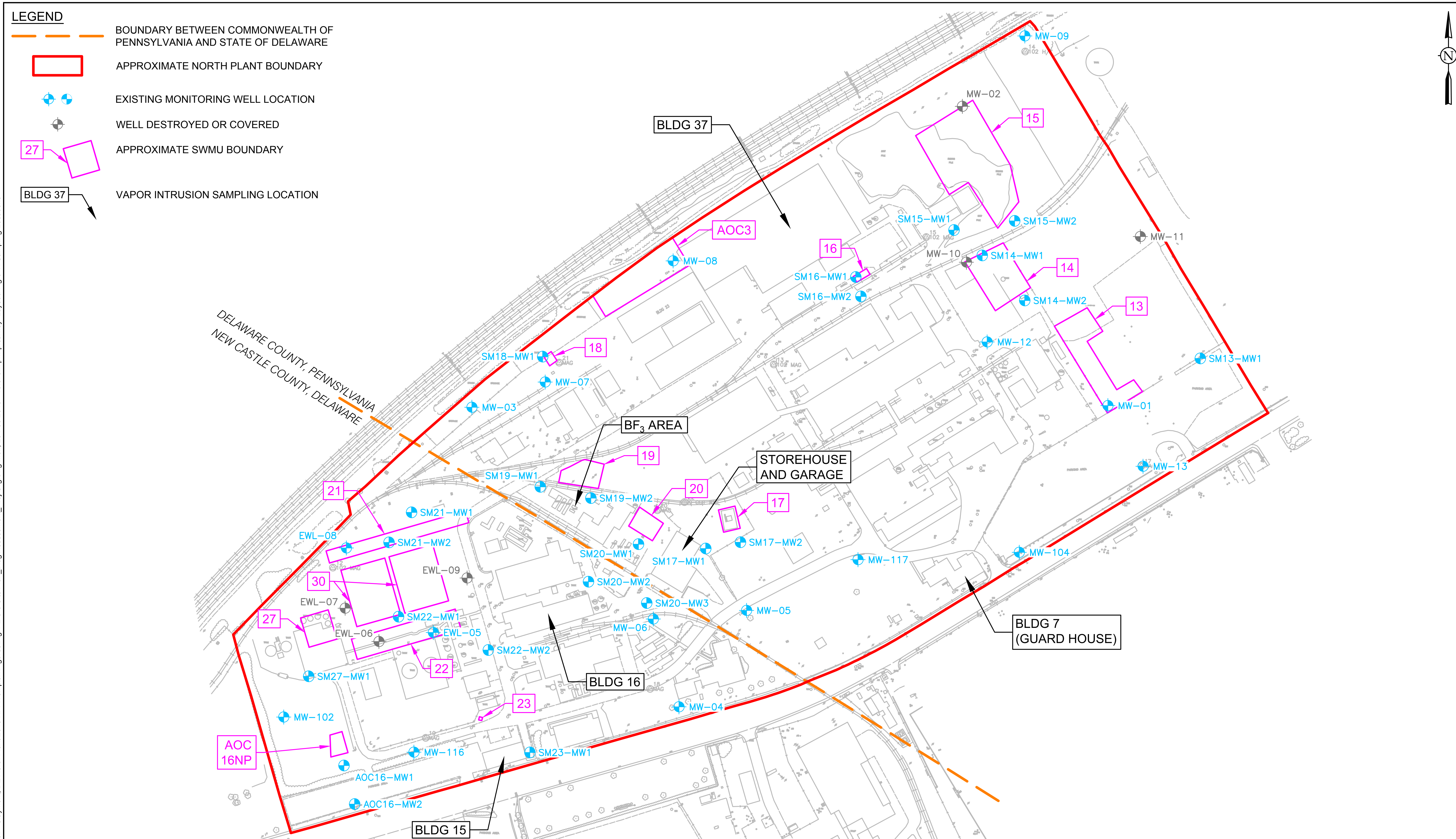
- BOUNDARY BETWEEN COMMONWEALTH OF PENNSYLVANIA AND STATE OF DELAWARE
- APPROXIMATE NORTH PLANT BOUNDARY
- EXISTING MONITORING WELL LOCATION
- WELL DESTROYED OR COVERED
- A5-01 PROPOSED MONITORING WELL LOCATION
- 25 GROUNDWATER CONTOUR ELEVATION (DASHED WHERE INFERRED)
- 25.91 GROUNDWATER ELEVATION (FT AMSL)
- 15 APPROXIMATE SWMU BOUNDARY
- DIRECTION OF GROUNDWATER FLOW

SOURCE

GOOGLE MAPS AERIAL, 2018.

PROJECTION / DATUM: DE83F	Honeywell DELAWARE VALLEY WORKS CLAYMONT, DELAWARE	wood. 751 Arbor Way, Suite 180 Blue Bell, PA 19422 Tel. 610-828-8100 www.woodplc.com	PREPARED BY: PJC	FIGURE 4 AREAS 5 AND 6 INVESTIGATION AREA	PROJECT NO.: 7772180021
0 100' 200' SCALE: 1" = 200'			CHECKED BY: JP	HONEYWELL - DELAWARE VALLEY WORKS CLAYMONT, DE	REVISION NO.: 0
			REVIEWED BY: JPM		DATE: JULY 2018

P:\Honeywell - Claymont, DE\North Plant\2018 RFI Workplan\Figures\Fig 3-4 MW06_Areas 5-6 Investigation Area.dwg Wed, 25 Jul 2018 - 5:39pm philip.carney Layout: Fig 4 Areas 5-6 Investigation Area



PROJECTION / DATUM: DE83F 0 100' 200' SCALE: 1" = 200'	Honeywell DELAWARE VALLEY WORKS CLAYMONT, DELAWARE	wood. 751 Arbor Way, Suite 180 Blue Bell, PA 19422 Tel. 610-828-8100 www.woodplc.com	PREPARED BY: PJC CHECKED BY: JPM REVIEWED BY: JPM	**FIGURE 5** **VAPOR INTRUSION SAMPLING LOCATIONS** **HONEYWELL - DELAWARE VALLEY WORKS** **CLAYMONT, DE**	PROJECT NO.: 7772180021 REVISION NO.: 0 DATE: FEBRUARY 2019

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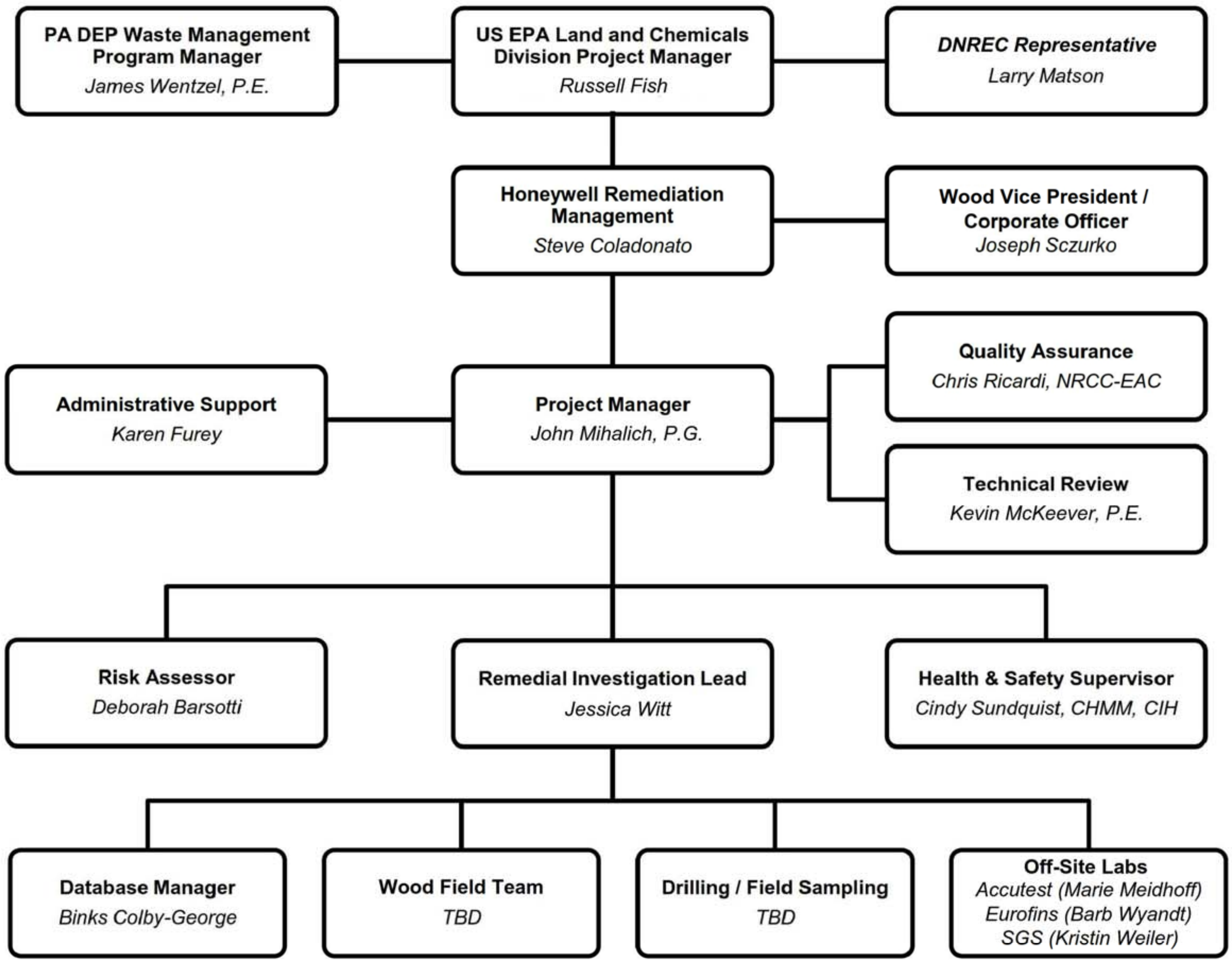


PROJECTION / DATUM: NONE	Honeywell	wood.	PREPARED BY: PJC	**FIGURE 6**	PROJECT NO.: 7772180021
	DELAWARE VALLEY WORKS		CHECKED BY: JPM	**PROJECT ORGANIZATION CHART**	REVISION NO.: 0
NO SCALE	CLAYMONT, DELAWARE	751 Arbor Way, Suite 180 Blue Bell, PA 19422 Tel. 610-828-8100 www.woodplc.com	REVIEWED BY: JPM	**HONEYWELL - DELAWARE VALLEY WORKS CLAYMONT, DE**	DATE: JANUARY 2019

\\phl-fs1\projects\Honeywell - Claymont, DE\North Plant\2018 RFI Workplan\Figures\Fig 1-2-5-6 Site Plan_Bldg Assessment_Proj Org.dwg Tue, 29 Jan 2019 - 1:29pm philip.carney Layout: Fig 6 Project Organization Chart_2019

Figure 7A. Revised Project Schedule, VI, Phase IV RFI, DVW, Claymont, DE

ID	Task Name
0	**Revised Project Schedule, VI, Phase IV RFI, DVW, Claymont, DE**
1	Notify and Coordinate with Honeywell Onsite Workforce
2	Contract Laboratory
3	Mobilize to the Site
4	Conduct Heating Season (assumed to be March 2019) Sub-Slab Soil Gas Sampling
5	Laboratory Analysis for Heating Season Sub-Slab Soil Gas Samples
6	Review Heating Season Sub-Slab Soil Gas Data and Analyze Indoor Air Samples if Necessary
7	Prepare Technical Memorandum
8	Submit Technical Memorandum
9	EPA Review
10	Notify and Coordinate with Honeywell Onsite Workforce
11	Mobilize to the Site
12	Conduct Cooling Season (assumed to be June 2019) Sub-Slab Soil Gas Sampling
13	Laboratory Analysis for Cooling Season Sub-Slab Soil Gas Samples
14	Review Cooling Season Sub-Slab Soil Gas Data and Analyze Indoor Air Samples if Necessary
15	Prepare Draft RFI Report
16	Submit Draft RFI Report

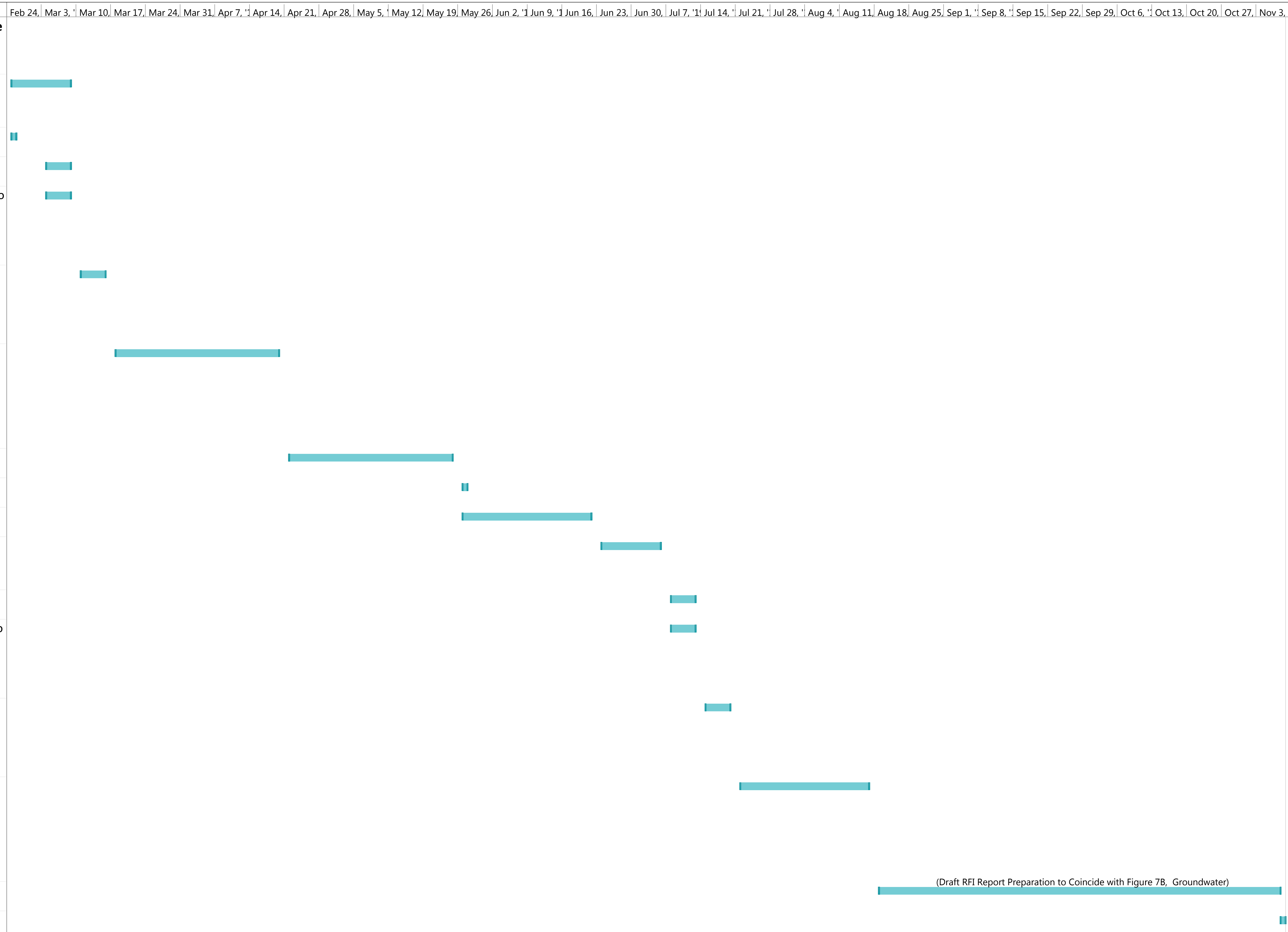
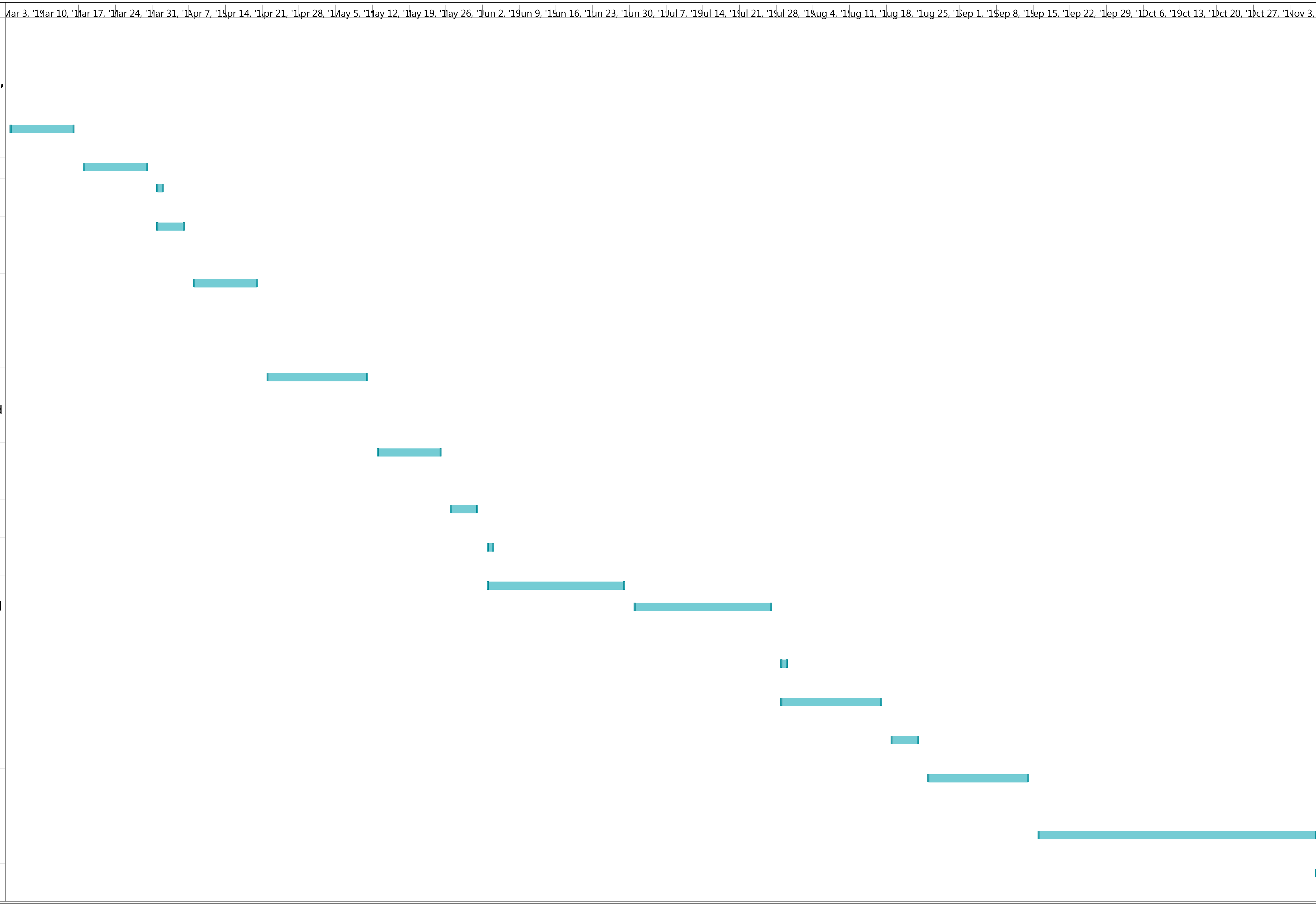


Figure 7B. Revised Project Schedule, Groundwater Phase IV RFI, DVW, Claymont, DE

ID	Task Name
0	**Revised Project Schedule, Groundwater Phase IV RFI, DVW, Claymont, DE**
1	Contract Driller and Laboratory
2	Drilling Permits
3	Mobilize to the Site
4	Collect Groundwater Levels
5	Install Soil Borings and Initial Groundwater Sampling
6	Laboratory Analysis (Groundwater and Soil)
7	Review Groundwater and Soil Data
8	Select Well Locations
9	Submit Interim Report
10	EPA Review
11	Road Opening and Drilling Permits
12	Mobilize to the Site
13	Install Monitoring Wells
14	Groundwater Sampling
15	Laboratory Analysis (Groundwater)
16	Prepare Draft RFI Report
17	Submit Draft RFI Report



APPENDIX A:

QAPP

APPENDIX B:

SAMP

APPENDIX C:

HASP

APPENDIX D:

VISL Outputs